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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,721	10/09/2001	Jian Zhou	M-11928 US	7841

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EXAMINER

LAROSE, COLIN M

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/974,721	Applicant(s) ZHOU ET AL.	
	Examiner Colin M. LaRose	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16,22 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-16,22 and 25 is/are allowed.
- 6) ☒ Claim(s) 1-3,8 and 24 is/are rejected.
- 7) ☒ Claim(s) 4-7 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 August 2006 has been entered.

Response to Amendments and Arguments

2. Applicant's remarks regarding the § 102 rejections of claim 1 in view of Hennessey and Michael have been considered and are persuasive. Accordingly, those rejections have been withdrawn. Applicant has asserted that a "de-skewing" process is for correcting the offset in the coordinates of a single location on a wafer and does correspond to correcting for an offset among subsequent layers on a wafer (see Applicant's remarks, p. 5). Also, Applicant has pointed out that a "recipe" as utilized herein corresponds to, *inter alia*, a stored image or pattern that is used by pattern recognition systems to locate a de-skew site (see Applicant's remarks, p. 6); it does not correspond to a method for performing a given task, in accordance with the plain meaning of "recipe." These clarifications are sufficient to disqualify Hennessey and Michael as anticipatory references because neither of these references disclose forming a "recipe" for "de-skewing" wafers, as claimed, and in accordance with the above meanings of these terms.

In view of newly-discovered prior art, a new ground of rejection for claim 1 appears below.

Claim Rejections - 35 USC § 112

3. In view of Applicant's amendments, the previous claim rejections under 35 USC § 112, have been withdrawn.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 8, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,556,947 by Scheiner et al. ("Scheiner").

Scheiner discloses a system for measuring patterns formed on wafers using a "recipe." The recipe contains an "alignment feature," which is a unique pattern found in each die on the wafer and is used for performing wafer alignment of wafers that are "similar." See column 1/20-35 and 8/1-11. In addition to containing the alignment feature, the recipe contains "all necessary information" regarding a specific site on a wafer. Column 7/17-20.

The alignment feature, as well as the other reference data, is extracted from a "golden" wafer that contains all of the representative structures on the wafer at each layer of the wafer. Column 2/54-62. These extractions are performed after the creation of each layer on the golden

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wafer so that reference data for all of the wafer layers are represented in the recipe. Column 2/63 through column 3/5.

Therefore, regarding claim 1, Scheiner discloses a method for forming a recipe for de-skewing wafers, comprising:

learning a first pattern at a de-skew site on a first wafer layer (i.e. Scheiner extracts an alignment pattern at a given site on a first layer of the golden wafer);

saving the first pattern and its location in a recipe for de-skewing wafers (i.e. Scheiner records the extracted alignment pattern, including information pertaining to its location, in a recipe that is used for "aligning," or de-skewing, wafers);

learning a second pattern at the de-skew site on a second wafer layer (i.e. Scheiner extracts an alignment pattern at the given site on a second layer of the golden wafer); and

saving the second pattern in the same recipe for de-skewing wafers (i.e. Scheiner records the second extracted alignment pattern, including information pertaining to its location, in the recipe that is used for "aligning," or de-skewing, wafers).

Regarding claim 8, Scheiner discloses saving a file name of a file including the first pattern (column 1/65-67).

Regarding claim 24, Scheiner teaches that the first wafer layer is a top surface of said wafer and said second wafer layer is the top surface of said wafer after said wafer is processed (i.e. Scheiner extracts the reference information for the golden wafer after each processed layer – see column 2/63-67).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,556,947 by Scheiner et al. ("Scheiner") in view of U.S. Patent 6,240,208 by Garakani et al. ("Garakani").

Regarding claim 2, Scheiner does not disclose learning the first pattern comprises determining a score of uniqueness for the first pattern.

Garakani discloses a method for identifying reference patterns to be utilized for aligning wafers. In particular, Garakani discloses that it is advantageous to select reference patterns that are unique. Garakani teaches determining the uniqueness of potential reference patterns, and selecting from among the reference patterns on the basis of their uniqueness scores. For example,

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in figure 2, the uniqueness of various reference patterns is measured at step 240, and the suggested reference patterns are ordered at step 260 based in part on the uniqueness scores.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Scheiner by Garakani to determine a score of uniqueness for the first pattern to be learned, since Garakani discloses that it is advantageous to select a reference pattern utilized for aligning semiconductor wafer layers that is unique, and determining a score of uniqueness indicates whether a pattern to be learned is unique (see e.g. column 1, lines 19-32; column 6, lines 58-67).

Regarding claim 3, Garakani discloses selecting a first pattern that has a parameter value (e.g. uniqueness) greater than a threshold (see column 7, lines 51-59). Therefore, that pattern that is learned and saved according to Scheiner's teachings is sufficiently unique.

Allowable Subject Matter

9. Claims 9-16, 22, and 25, as previously indicated, are allowable.

10. Claims 4-7 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Related Prior Art

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,528,219 by Conrad et al.;

U.S. Patent 6,043,864 by Lo et al.; and

U.S. Patent 6,482,713 by Marini.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry of a general nature or relating to the status of this application or proceeding can also be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.



Colin M. LaRose
Group Art Unit 2624